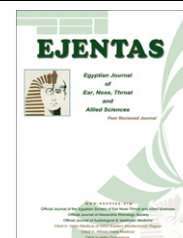




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# Intraparotid facial nerve schwannoma involving the deep lobe: A case report <sup>☆</sup>

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**Abstract** Schwannomas are nerve sheath tumors, and 20–40% of all schwannomas are seen in the head and neck regions. Intraparotid facial nerve schwannoma involving the deep lobe of parotid are uncommon. The preoperative diagnosis of intraparotid facial nerve lesion is difficult when the facial nerve is normal. We present here a case of intraparotid schwannoma arising from the lower buccal branch of facial nerve and mainly involving the deep lobe of the parotid gland.

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## 1. Introduction

Schwannomas (neurilemmomas) are benign, slow-growing, encapsulated neoplasms arising from Schwann cells of nerve sheath that form the myelin sheaths of the myelinated peripheral nerve.<sup>1</sup> About 25% of all schwannoma are located in the head and neck region. Intraparotid facial nerve schwannoma are uncommon and schwannoma arising from the branches of facial nerve and involving deep lobe of parotid are even rare.

Facial nerve schwannoma can arise from any segment of the nerve, from the glial–Schwann cell junction at the cerebellopontine angle to the peripheral branches in the face.<sup>1</sup> Schwannomas of the facial nerve can arise either from extratemporal or intratemporal course of the nerve.<sup>2</sup> Most of the facial nerve schwannoma arise from intratemporal (90%) course of the facial nerve, and only 9% of facial nerve schwannomas are located extracranially presenting as asymptomatic parotid mass.<sup>3</sup>

<sup>☆</sup> This material has never been published and is not currently under evaluation in any other peer-reviewer publication. There is no conflict of interest or financial disclosure to be made.

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It is difficult to establish a correct preoperative diagnosis of facial nerve schwannoma of the parotid gland in the presence of normal facial nerve function. The following case is presented because the presentation was of asymptomatic parotid tumor with normal facial nerve function and intra-operatively a cystic tumor was found arising from the lower buccal branch and involving deep lobe of the parotid gland.

## 2. Case report

A 45 yrs female presented with a three month history of painless, gradually progressive swelling of the left parotid region. There was no history of facial weakness; facial twitching or numbness. There was no history of prior irradiation or trauma or smoking. On examination there was a single 4 × 3 cm firm non-tender mobile swelling over the lower part of left parotid gland. Facial nerve function was normal and intra-oral examination showed no bulge in the oropharynx. Rest of the ENT and systemic examination was normal.

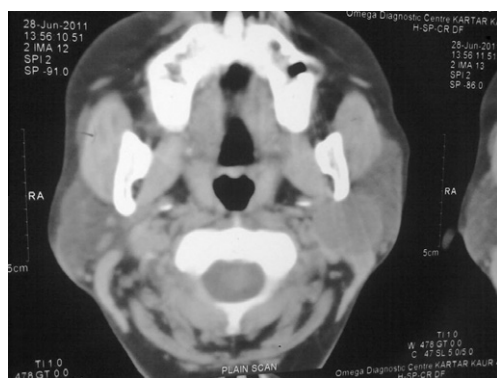
Contrast enhanced computed tomographic scan showed lobular well defined homogenous enhancing mass involving the deep lobe of the parotid gland (Fig. 1). Fine needle aspiration cytology of the lesion showed salivary aspirate.

Total conservative parotidectomy was done. The branches of the facial nerve were identified. Intra-operatively about 4 × 3 cm cystic mass with solid component was found involving deep lobe of the parotid gland. The lower buccal branch was found adhered to the tumor and was dissected with great difficulty. The upper buccal and the platysmal branch were lifted with the help of nerve retractor and tumor was removed in toto (Fig. 2). Post operatively patient developed deviation of the angle of mouth which improved after six months.

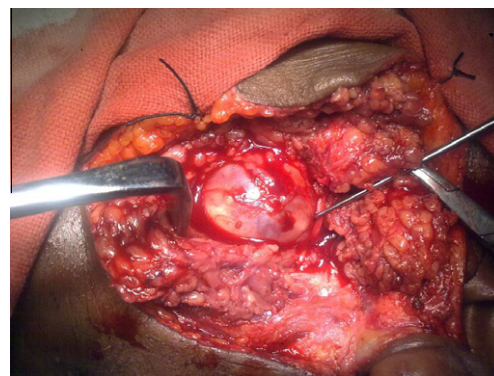
Histopathology of the excised mass showed spindle-shaped cells arranged in characteristic Verocay bodies. The neoplastic cell showed nuclear and cytoplasmic immunopositivity with S-100 and negative for smooth muscle actin. A diagnosis of schwannoma was confirmed (Fig. 3).

## 3. Discussion

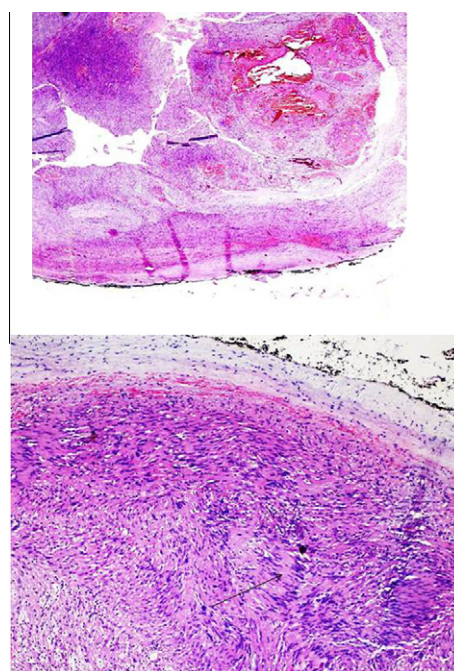
Schwannomas were first reported by Virchow in 1908 and are benign tumors of peripheral nerve originating in the nerve sheath. Approximately 25–40% of all schwannomas occur in



**Figure 1** Contrast enhanced computed tomography scan (axial cuts): dumbbell shaped homogenous enhancing tumor involving deep lobe of parotid gland.



**Figure 2** Intraop photograph showing 4 × 3 cm cystic mass with solid component was found involving deep lobe of the parotid gland.



**Figure 3** Fibrous capsule with the underlying tumor exhibiting cellular and hypocellular areas. The cellular area shows nuclear palisading around the fibrillar cellular processes, so called 'Verocay bodies' (arrow) and myxoid hypocellular area.

the head and neck regions.<sup>4</sup> Schwannomas of the head and neck region most commonly involve the eighth cranial nerve.<sup>5</sup> Schwannomas of the seventh cranial are uncommon. Schwannoma of seventh cranial nerve most commonly (90%) affect the intracranial and intratemporal course of the facial nerve. Seventh nerve schwannoma involving the extratemporal portion (intraparotid) of facial nerve are rare (9%).<sup>6</sup> Caughey et al. had conducted a retrospective study over 38-year period, focusing on facial nerve schwannoma involving parotid gland. Out of a total of 3722 patients with schwannomas reviewed, only 29 were related to facial nerve. From this small figure, only eight involved the parotid segment of the facial nerve.<sup>7</sup>

The typical presentation of an intraparotid facial nerve Schwannoma is a slow-growing, painless parotid mass

mimicking the commonest benign parotid tumor, pleomorphic adenoma. In addition, facial nerve schwannoma (intraparotid) may present with pain or facial palsy and may raise suspicion of a malignant parotid tumor. The incidence of Facial nerve palsy in intraparotid facial nerve schwannoma is about 20–27%.<sup>8</sup> The ability of the parotid gland to accommodate tumor expansion well and the propensity of tumor to grow eccentrically and push nerve fibres away accounts for the low rate of facial palsy in intraparotid facial nerve schwannoma.<sup>9</sup> Low rate of facial nerve palsy makes the diagnosis of schwannoma difficult preoperatively. An excessive long duration of symptoms might be an indication of schwannoma.

Neurogenic intraparotid benign tumor may be either schwannoma or neurofibroma. Schwannoma are encapsulated tumor. Microscopically the diagnosis is confirmed by histopathological evaluation and consists of two main patterns. The first involves Schwann cells arranged in a close twisting fashion termed *Antoni type A*. The nuclei often lie in parallel rows or in a palisading arrangement. When two rows of palisading nuclei have enclosed between them a space filled with amorphous collagen, this arrangement is called a Verocay body.<sup>10</sup> The second type of tissue is called *Antoni type B* and is composed of very loosely arranged elongated Schwann cells set in a myxoid morphology and meshwork of reticulum fibers and microcysts.<sup>10,11</sup> Immunostaining for S-100 is required to establish the neural origin of the tumor, and smooth muscle actin (SMA) to rule out a leiomyoma. Neurofibromas are nonencapsulated tumor and composed of an admixture of all elements of a peripheral nerve. The histological difference between schwannomas and neurofibromas of the facial nerve may dictate the type of surgical resection. Theoretically, schwannomas can be stripped free of the nerve without sacrificing it. In contrast, fibres from the facial nerve pass directly through a neurofibroma and separation of the nerve fibres from the tumor is rarely possible. Neurofibromas generally require nerve sectioning and cable grafting, using the sural nerve for a long defect and the greater auricular nerve for a short defect.<sup>12</sup>

Preoperative diagnosis of intraparotid Facial nerve Schwannoma is essential for treatment planning but is rarely achieved. Sonographically, neurogenous tumors present as spindle-shaped masses with cystic areas.<sup>13</sup> Computed tomography scan usually shows a smooth, sharply circumscribed lesion in the parotid. It is not the preferred imaging modality for facial nerve schwannoma but it may reveal osseous changes.<sup>14</sup> Magnetic resonance imaging (MRI) is optimal in detecting small facial nerve schwannoma along the course of the facial nerve.<sup>14</sup> MRI shows a mass with signal intensity isointense to muscle on T1 and hyperintense to muscle on T2 sequence, respectively. The target sign (central low and peripheral higher signal intensity on T2 weighted images) is suggestive of a neurogenous tumor such as benign facial nerve schwannoma or malignant nerve sheath neoplasm.<sup>11</sup>

Fine needle aspiration (FNA) is unreliable in making the diagnosis of intraparotid facial nerve schwannoma. Fine needle aspiration cytology may reveal spindle-shaped cells with ill-defined cytoplasm, arranged in clusters (Verocay bodies).<sup>15</sup> In most cases, results are inconclusive, as in our case or suggest pleomorphic adenoma.<sup>16,17</sup>

Almost half of the extratemporal facial nerve tumors involve the main trunk of the nerve.<sup>18</sup> The most diagnostic

feature of intraparotid facial nerve schwannoma is intraoperative difficulty in locating the facial nerve during excision of tumor.<sup>19</sup> Benign facial nerve schwannoma grows slowly and resection is not always indicated.<sup>20</sup> Several authors have reported the occurrence of facial paralysis when an intraparotid facial nerve tumor was simply biopsied or carefully resected with apparent preservation of the facial nerve<sup>18,21</sup> but other authors advocate its removal if it can be dissected easily off the nerve.<sup>22,23</sup> However, in our case the facial nerve schwannoma arose from the lower buccal branch of facial nerve and the nerve was lying over the tumor which was dissected with difficulty and the tumor primarily involved the deep lobe of the parotid gland.

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